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EXAMINER	
YAM, STEPHEN K	
ART UNIT	**PAPER NUMBER**
2878	

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/542,782	LITTLE, JOSEPH R.
	Examiner	Art Unit
	Stephen Yam	2878

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 28 May 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-60 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-60 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 01 June 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to Amendments and remarks filed on May 28, 2004. Claims 1-60 are currently pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21, 23, 32, 33, and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Pramanik et al. US Patent No. 5,852,497.

Regarding Claim 21, Pramanik et al. teaches (see Fig. 2A) a method of determining a destination for a semiconductor device substrate (202) comprising identifying a mark (see Col. 3, lines 43-52) comprising at least one recess (206) within a surface of the semiconductor device substrate and covered with at least one layer of material (210) substantially opaque to at least some wavelengths of electromagnetic radiation (see Col. 4, lines 54-56), by scanning (see Col. 4, line 65 to Col. 5, line 2, Col. 5, lines 27-39) electromagnetic radiation of at least one wavelength across at least a portion of the semiconductor device substrate having the recess, the at least one wavelength capable of at least partially penetrating (see Col. 4, lines 54-56) the material, measuring (see Col. 3, lines 39-42) an intensity of radiation of at least one wavelength reflected by different locations of said at least a portion of the semiconductor device substrate, detecting (see Col. 7, lines 56-67 and Col. 8, lines 6-9) locations at which said intensity changes from

substantially a baseline intensity, and correlating (see Col. 3, lines 51-52) each location at which said intensity changes to identify the mark (see Col. 1, lines 63-65 and Col. 10, lines 38-40), and identifying (see Col. 1, lines 14-20 and 25-30) a predetermined destination (position/alignment of wafer with respect to a stepper- see Col. 1, lines 25-30) for the semiconductor device substrate based on the mark (see Col. 10, lines 40-44).

Regarding Claim 23, Pramanik et al. teach scanning effected over a portion of the wafer comprising semiconductor material (silicon substrate) where the mark is located (see Fig. 2A).

Regarding Claim 32, Pramanik et al. teach the scanning effected from above the substrate (see Fig. 2A).

Regarding Claim 33, Pramanik et al. teach the scanning effected at a non-perpendicular angle relative to the substrate (see Fig. 2A).

Regarding Claim 36, Pramanik et al. teach the intensity measurement using a reflectometer (see Col. 3, lines 39-43 and Col. 5, lines 46-50).

Regarding Claim 37, Pramanik et al. teach identifying the location in which said electromagnetic radiation was reflected (θ_2, θ_3 – see Fig. 2A and Col. 6-8).

Regarding Claim 38, Pramanik et al. teach identifying the location in which said electromagnetic radiation was directed (θ_1- see Fig. 2A and Col. 3, lines 38-43).

3. Claims 41 and 49-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Noguchi US Patent No. 5,361,150.

Regarding Claim 41, Noguchi teaches (see Fig. 4 and 6) a system for identifying a marking (4) on a substrate indicative of a type of semiconductor device being fabricated on the

substrate (see Col. 6, lines 5-17) and at least partially covered by at least one layer of material (8, 11), comprising at least one radiation source (see Col. 5, lines 12-15) configured and positioned to direct electromagnetic radiation of at least one wavelength toward a substrate (see Col. 5, lines 16-20), the at least one wavelength capable of at least partially penetrating a material substantially opaque to at least some wavelengths of electromagnetic radiation (see Col. 5, lines 16-18), at least one reflectometer (see Col. 5, lines 22-25) positioned so as to receive electromagnetic radiation of the at least one wavelength reflected from a location of the substrate covered with a material substantially opaque to at least some wavelengths of electromagnetic radiation ("reflection method"- see Col. 5, lines 22-25), and at least one processor (performing OCR ("optical character recognition")- see Col. 5, lines 47-50) associated with the reflectometer (see Col. 6, lines 1-3) for analyzing (inherent function in OCR) a pattern of intensities (from contrast- see Col. 5, lines 9-12 and 22-25) of electromagnetic radiation of the at least one wavelength reflected from a plurality of locations (7) (see Col. 5, lines 3-12) of the substrate and for correlating (inherent function in OCR) the pattern of intensities to a known identifier (character) associated with the marking and to the type of semiconductor device being fabricated on the substrate (see Col. 6, lines 5-8).

Regarding Claim 49, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 100 nm to about 1,000 nm.

Regarding Claim 50, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 190 nm to about 800 nm.

Regarding Claim 51, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of at least about 140 nm.

Regarding Claim 52, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 220 nm to about 800 nm.

Regarding Claim 53, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 300 nm to about 780 nm.

Regarding Claim 54, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of "about" 550 nm.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 12, 13, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pramanik et al. in view of Noguchi.

Regarding Claims 1, 3, 12, 13, and 16-18, Pramanik et al. teach (see Fig. 2A) a method for identifying a mark (see Col. 3, lines 43-52) comprising recesses (206) in a substrate surface (202) through at least one layer (210) formed over the mark, comprising scanning (see Col. 4, line 65 to Col. 5, line 2, Col. 5, lines 27-39) electromagnetic radiation of at least one wavelength across at least a portion of the substrate including the recess, the at least one wavelength capable of at least penetrating (see Col. 4, lines 54-56) a material substantially opaque to at least some wavelengths of electromagnetic radiation, measuring (see Col. 3, lines 39-42) an intensity of radiation of at least one wavelength reflected by different locations of said at least a portion of

the substrate, detecting (see Col. 7, lines 56-67 and Col. 8, lines 6-9) locations at which said intensity changes from substantially a baseline intensity, and correlating (see Col. 3, lines 51-52) each location at which said intensity changes to identify the mark. Regarding Claim 3, Pramanik et al. teach scanning effected over a portion of the wafer comprising semiconductor material (silicon substrate) where the mark is located (see Fig. 2A). Regarding Claim 12, Pramanik et al. teach the scanning effected from above the substrate (see Fig. 2A). Regarding Claim 13, Pramanik et al. teach the scanning effected at a non-perpendicular angle relative to the substrate (see Fig. 2A). Regarding Claim 16, Pramanik et al. teach the intensity measurement using a reflectometer (see Col. 3, lines 39-43 and Col. 5, lines 46-50). Regarding Claim 17, Pramanik et al. teach identifying the location in which said electromagnetic radiation was reflected (θ_2, θ_3 – see Fig. 2A and Col. 6-8). Regarding Claim 18, Pramanik et al. teach identifying the location in which said electromagnetic radiation was directed (θ_1- see Fig. 2A and Col. 3, lines 38-43). Pramanik et al. do not teach correlating each intensity change location to at least one characteristic which distinguishes the mark from other marks on or in the substrate and to identify the type of semiconductor device being fabricated on the substrate. Noguchi teaches (see Fig. 6) a similar device, with a mark (7) on a substrate (1) with a layer (8, 11) formed over the mark substantially opaque to at least some wavelengths of electromagnetic radiation (see Col. 5, lines 16-18), with correlating each location at which the intensity changes ("contrast"- see Col. 5, lines 22-23) to at least one characteristic (character- see Col. 5, lines 45-47 and Col. 5, line 66 to Col. 6, line 5) which distinguishes the mark from other marks on or in the substrate and to identify the type of semiconductor device being fabricated on the substrate (see Col. 6, lines 5-17). It would have been obvious to one of ordinary skill in the art at the time the invention was

made to correlate each intensity change location to at least one characteristic which distinguishes the mark from other marks on or in the substrate and to identify the type of semiconductor device being fabricated on the substrate, as taught by Noguchi, in the method of Pramanik et al., to provide recognition of unique identification features for each substrate for traceability and improved product control, as taught by Noguchi (see Col. 1, lines 35-42).

6. Claims 2, 6-11, 14, 15, 22, 26-31, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pramanik et al. (in view of Noguchi for Claims 2, 6-11, 14, and 15).

Regarding Claims 2 and 22, Pramanik et al. (in view of Noguchi for Claim 2) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. do not teach raster scanning for the light source. It is well known in the art to use raster scanning as a conventional method of scanning a beam of light for detection, as it is the most straightforward and simple procedure of directing light. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use raster scanning in the method of Pramanik et al. (in view of Noguchi for Claim 2), to utilize a well-known process for light scanning and provide a straightforward system for illumination of the edges.

Regarding Claims 6-11 and 26-31, Pramanik et al. (in view of Noguchi for Claims 6-11) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. also teach (see Col. 3, lines 30-40) determining the optimal wavelength to use according to the type and thickness of the opaque layer. Pramanik et al. do not teach emitting the light wavelengths as claimed. It is well known in the art to use different wavelengths of light to penetrate different materials, depending on the composition of the material, and that wavelengths

outside of the absorption range of the material do not penetrate the material and hence do not affect the detection of the mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to the light wavelengths as claimed in the method of Pramanik et al. (in view of Noguchi for Claims 6-11), to enable scanning of the alignment mark for different polysilicon layer compositions and utilize various light sources emitting a wide wavelength range.

Regarding Claims 14, 15, 34, and 35, Pramanik et al. (in view of Noguchi for Claims 14 and 15) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. also teach the alignment process where the wafer is positioned with respect to the surrounding components (see Col. 1, lines 14-20 and 25-30). Pramanik et al. do not teach moving a source of electromagnetic radiation relative to the substrate or moving the substrate relative to the source. It is design choice as to which component is actually moved, as long as both components of the system are repositioned relative to each other. It would have been obvious to one of ordinary skill in the art at the time the invention was made to move either the source or the substrate in the method of Pramanik et al. (in view of Noguchi for Claims 14 and 15), to enable the most delicate component to remain static while moving the other component, to prevent damage to the components while performing the alignment process.

7. Claims 4, 5, 19, 20, 24, 25, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pramanik et al. (in view of Noguchi for Claims 4, 5, 19, and 20) in view of Bareket US Patent No. 5,889,593.

Regarding Claims 4, 5, 24, and 25, Pramanik et al. (in view of Noguchi for Claims 4 and 5) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. do not teach directing and measuring the intensities of a plurality of wavelengths from the radiation source. Bareket teaches directing and measuring intensities of a plurality of wavelengths from a radiation source reflected off the substrate (see Col. 5, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plurality of wavelengths as taught by Bareket in the system of Pramanik et al. (in view of Noguchi for Claims 4 and 5), to provide detection from multiple penetration characteristics of the opaque layer for improved mark detection and recognition through varied contrast between each wavelength.

Regarding Claims 19, 20, 39 and 40, Pramanik et al. (in view of Noguchi for Claims 19 and 20) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. do not teach mapping the location at which the intensity of electromagnetic radiation varies from baseline intensity or recognizing the mark based on the mapping. Bareket teaches (see Fig. 3) a detection system for a mark on a semiconductor substrate with a radiation source (50), a reflectometer (72, 73, 74, 76, 78) to receive electromagnetic radiation reflected from the substrate, and a processor (82, 138) for analyzing an intensity (see Col. 7, lines 49-55) of electromagnetic radiation of said at least one wavelength reflected from said location of said substrate, comparing (see Col. 7, lines 55-60) the detected intensity to a baseline intensity, under control of a computer program (running on the processor (82)), storing (see Col. 9, lines 34-37) in memory the location where the intensity varies from the baseline intensity, mapping (see Col. 8, lines 11-15) the locations where an intensity varies from

a baseline intensity (as multiple locations are mapped and the measurement locations and data are stored in memory) (see Col. 9, lines 34-37), and identifying (see Col. 8, lines 50-56) a surface feature based on the mappings, under the control of at least one program (running on the processor (138)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mapping and recognizing functions of the processor in Bareket in the method of Pramanik et al. (in view of Noguchi for Claims 19 and 20), to efficiently provide determination and location of the alignment mark in order to correctly align the semiconductor wafer as desired by Pramanik et al. (see Col. 1, lines 25-30 and Col. 2, lines 59-64).

8. Claims 42-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of Duncan et al. US Patent No. 4,585,931.

Regarding Claims 42-45, Noguchi teaches the system as taught in Claim 41, according to the appropriate paragraph above. Noguchi does not teach a logic circuit comparing the detected intensity to a baseline intensity. Bareket teaches (see Col. 7, lines 55-60) logic circuits for comparing the detected intensity to a baseline intensity, under control of a computer program (running on the processor (82)), storing (see Col. 9, lines 34-37) in memory the location where the intensity varies from the baseline intensity, mapping (see Col. 8, lines 11-15) the locations where an intensity varies from a baseline intensity (as multiple locations are mapped and the measurement locations and data are stored in memory) (see Col. 9, lines 34-37), and identifying (see Col. 8, lines 50-56) a surface feature based on the mappings, under the control of at least one program (running on the processor (138)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to compare the detected intensity to a baseline

intensity, store the locations of variances, and map the locations in the system of Noguchi, to measure an entire area for identification detection markings and provide a detailed contour mapping of the substrate.

Regarding Claim 46, Noguchi teaches the system as taught in Claim 41, according to the appropriate paragraph above. Noguchi does not teach an actuation apparatus for moving the radiation source or the substrate. Bareket teaches (see Fig. 3) a similar device, with an actuation apparatus (132) (see Fig. 7) for moving a substrate (68) (see Col. 8, lines 18-28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an actuation apparatus as taught by Bareket in the system of Noguchi, to load and unload the substrates between a storage environment and a stage, as taught by Bareket (see Col. 8, lines 29-33).

Regarding Claims 47 and 48, Noguchi teaches the system as taught in Claim 41, according to the appropriate paragraph above. Noguchi does not teach directing and measuring the intensities of a plurality of wavelengths from the radiation source. Bareket teaches (see Fig. 3) a similar device, with directing and measuring intensities of a plurality of wavelengths from a radiation source (50) reflected off a substrate (68) (see Col. 5, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plurality of wavelengths as taught by Bareket in the system of Noguchi, to provide detection from multiple penetration characteristics of the opaque layer for improved mark detection and recognition through varied contrast between each wavelength.

9. Claims 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of Duncan et al. US Patent No. 4,585,931.

Regarding Claims 55 and 56, Noguchi teaches the system in Claim 41, according to the appropriate paragraph above. Noguchi does not teach the at least one radiation source positioned to emit incident radiation toward an active surface of the substrate at a non-perpendicular angle thereto. Duncan et al. teach (see Fig. 2) a similar device for identifying a marking (32) on a substrate (30), with a radiation source (36) positioned to emit incident radiation (37) toward an active surface (top) of the substrate at a non-perpendicular angle thereto. It would have been obvious to one of ordinary skill in the art at the time the invention was made to position the at least one radiation source to emit incident radiation toward an active surface of the substrate at a non-perpendicular angle thereto as taught by Duncan et al. in the system of Noguchi, to provide increased contrast to distinctively identify the markings.

Regarding Claims 55 and 56, Noguchi teaches the system in Claim 41, according to the appropriate paragraph above. Noguchi does not teach a user interface or at least one output device associated with the at least one processor. Duncan et al. teach (see Fig. 2) a similar device for identifying a marking (32) on a substrate (30), with a user interface and output device (57) associated with a processor (56) for analyzing the pattern of intensities from a reflectometer (38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a user interface or output device associated with the processor as taught by Duncan et al. in the system of Noguchi, to provide a user display for operator viewing of the marking information.

10. Claims 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bareket in view of Noguchi.

Bareket teaches (see Figs. 4 and 7) a processor (82, 138) for characterizing a marking in a substrate comprising a logic circuit (82) for comparing (see Col. 7, lines 56-67 and Col. 8, lines 6-9) a measured intensity of at least one wavelength of reflected radiation to a baseline intensity of said at least one wavelength of radiation reflected from a planar portion of said substrate, and at least one logic circuit (138) for mapping (see Col. 8, lines 11-15) a plurality of locations of said substrate where said measured intensity differs from said baseline intensity (as multiple locations are mapped and the measurement locations and data are stored in memory) (see Col. 9, lines 34-37), under control of at least a portion of at least one program (running on the processor (138)), a map (see Col. 8, lines 47-53) resulting from said mapping comprising a digital image (images in a microprocessor are inherently digital) of the marking. Regarding Claim 60, Bareket teaches (see Fig. 7) a logic circuit (138) for characterizing (see Col. 8, lines 50-56) the recess based on the plurality of locations mapped by the at least one logic circuit for mapping, under control of at least a portion of a program (running on the processor (138)). Bareket does not teach the marking as material-covered and recessed, or at least one logic circuit for identifying a type of semiconductor device that corresponds to the mapped locations. Noguchi teaches (see Fig. 4 and 6) a similar device, with a marking (space etched on (7)) that is material-covered (8, 11) and recessed (see Fig. 6), with at least one logic circuit (performing OCR- see Col. 5, lines 45-47 and Col. 6, line 1 to Col. 5) for identifying a type of semiconductor device (see Col. 6, lines 5-8) that corresponds to mapped locations of intensities (contrast detected from sensor device- see Col. 5, lines 9-12 and 22-25 and Col. 6, lines 1-2). It would have been obvious to

one of ordinary skill in the art at the time the invention was made to provide the marking as material-covered and recessed and to provide at least one logic circuit for identifying a type of semiconductor device that corresponds to the mapped locations, as taught by Naguchi, in the processor of Bareket, to provide unique substrate identification for traceability and improved product control, as taught by Noguchi (see Col. 1, lines 35-42).

Response to Arguments

11. Applicant's arguments filed May 28, 2004 have been fully considered but they are not persuasive.

Applicant argues that Pramanik does not include an express or inherent description of identifying a mark, or of identifying a predetermined destination for a semiconductor device substrate based on an identity of the mark. Examiner asserts that Pramanik does teach identifying the mark, as previously stated in Col. 1, lines 63-65, and also explicitly within the claimed invention, in Col. 10, lines 38-40. Pramanik also teaches identifying a predetermined destination for a semiconductor device substrate based on an identity of the mark, as previously stated in Col. 1, lines 25-30, and also explicitly within the claimed invention, in Col. 10, lines 40-44.

Applicant also argues that Noguchi does not teach a material substantially opaque to at least some wavelengths of electromagnetic radiation, but only provides transparent films, and teaches "no opaque thin film is laminated on the character pad". Examiner asserts that Naguchi's definition of opaque is limited to the visible spectrum (visual red light and near infrared light-

see Col. 5, lines 13-15), while Applicant's claimed invention provides opacity for a specific range or subset of wavelengths of electromagnetic radiation. Naguchi teaches the films as composed of silicon oxide or silicon nitride, and providing light transmission of 90% for lights **not less than 350nm**. Therefore, wavelengths of electromagnetic radiation outside of the transmissive range of the film are not significantly transmitted through the film. For reference, Examiner submits Ezaki et al. US Patent No. 6,366,639, which provides a transmittance profile of a silicon oxide film (see Fig. 15-17), demonstrating a property of silicon oxide film that it becomes significantly opaque with increasing wavelengths. Therefore, the silicon oxide film of Naguchi also becomes significantly opaque for light of sufficient wavelength.

Applicant also argues that the sensor devices of Noguchi need not include a radiation source configured and positioned to direct electromagnetic radiation towards a substrate. Examiner asserts that Noguchi recites a "beam scanning system" (see Col. 4, lines 34-37) operating in a "reflection detection method" or "transmission detection method" (see Col. 5, lines 22-25). Inherently, such a system operates using an active light source emitting a beam towards the object, and a detector detecting a modifying characteristic of the light beam by an object by capturing either reflected (for reflection detection method) or transmitted (for transmission detection method) light, and analyzing the light to determine the extent of the modifying characteristic and hence, measuring a characteristic about the object itself. Therefore, a light source (preferably having visual red light or near-infrared light in the range of 600 nm to about 1000nm according to Noguchi- see Col. 5, lines 12-15) is required to emit light onto the substrate through the films (8, 11) and reflected off the sections of the lower metal film (7) or transmitted though the gaps between sections of the lower metal film.

Applicant further argues that Bareket does not teach a baseline intensity from a planar portion of a substrate, but only describes conventional optical recognition systems in which a planar portion of a substrate need not be used as a reference point. Examiner asserts that Bareket teaches planar, since it is scanning a substrate (semiconductor wafer- see Col. 8, lines 9-28 and 44-63) which lies across the X-Y plane (see Fig. 7), and is capturing an image representative of the X-Y plane (see Col. 8, lines 47-56). Since the captured data is compared to a baseline data, the baseline data must also possess the same characteristic qualities of the captured data to perform a valid comparison- ie., the baseline data is also representative of an reference reflection amount from an X-Y plane, a planar portion of the substrate, as disclosed by Bareket in Col. 7, lines 55-60.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SY

SY

THANH X. LUU
PATENT EXAMINER